

Notice of Allowability

Application No.

09/684,184

Examiner

Douglas S. Lee

Applicant(s)

FU ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/27/05.
2. ☒ The allowed claim(s) is/are 1-80.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EA

DETAILED ACTION***Response to Amendment***

1. Applicant's amendments and arguments with respect to claims 1-80 and filed 6/27/2005 have been fully considered and they are persuasive. The examiner withdraws the provisional double patenting rejection since copending application 10/162,434 has not mature into a patent at the time this case is allowable. However, the double patenting issue will come up when the copending application 10/162,434 is ready for the examination.

Examiner's Statement of Reasons for Allowance

1. Claims 1-80 are allowable over the prior of records.
2. The following is an Examiner's statement of reasons for the indication of allowable subject matter: Regarding claim 1, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating an undersurface hearing-aid vent in the thickened model of the shell surface, at least a location proximate the directed path.
Regarding claim 22, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating the vent in the thickened model, at least a location proximate the directed path
Regarding claim 26, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating a watertight model of hearing-aid shell by nonuniformly thickening a digital model of a hearing-aid shell surface about a portion of the shell surface that defines a desired location of an undersurface hearing-aid vent.

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Regarding claim 32, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating a 2-manifold with nonzero boundary triangulation of the vent that is compatible with the watertight 2-manifold triangulation of the hearing aid shell; and printing a three-dimensional hearing-aid shell based on the watertight 2-manifold triangulation of the hearing-aid shell and the 2-manifold with nonzero boundary vent triangulation.

Regarding claim 34, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of thickening a three-dimensional digital model of a hearing-aid shell surface using operations that move each of a plurality of vertices on the shell surface along a respective path that is normal to an inner shell surface.

Regarding claims 40 and 43, the allowability, at least in part, resides an automated hearing-aid shell manufacturing system, fails to teach in part computer-readable program code that generates a first digital model of a hearing-aid shell from point cloud data; and computer-readable program code that determines whether first internal hearing-aid components can fit properly within an interior volume of the first digital model of the hearing-aid shell.

Regarding claim 50, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating a three-dimensional model of a hearing-aid shell surface by modifying a shape of a first digital model of a positive or negative representation of at least a portion of an ear canal of a subject to more closely conform to a shape of a digital template

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of a hearing-aid shell and/or modifying the shape of the digital template to more closely conform to the shape of the first digital model.

Regarding claim 53, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of printing a hearing-aid shell that conforms to the ear canal of the subject, based on the second digital representation.

Regarding claim 60, the allowability, at least in part, resides an automated hearing-aid shell manufacturing system, fails to teach in part a steps of generating a three-dimensional model of a hearing-aid shell surface by modifying a shape of the digital template to more closely conform to a shape of the first digital model and/or modifying the shape of the first digital model to more closely conform to the shape of the digital template.

Regarding claim 72, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating point cloud data by scanning the printed hearing-aid shell; and generating a second three-dimensional digital model of a hearing-aid shell surface from the point cloud data.

Regarding claim 76, the allowability, at least in part, resides a method of manufacturing a hearing-aid shell, fails to teach in part a steps of generating an intermediate model of a hearing-aid shell having a partially offset inner surface by locally thickening a three-dimensional model of a hearing-aid shell surface using operations that move each of a plurality of vertices on the shell surface along a respective path that is defined by a respective normalized adjusted normal to the

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shell surface; and then globally or locally thickening the intermediate model to define an entirely offset inner surface of a thickened model of the shell surface, using operations that move each of a plurality of vertices on the partially offset inner surface along a respective path that is defined by a respective normalized readjusted normal to the partially offset inner surface.

3. Claims 2-21, 23-25, 27-31, 33, 35-39, 41-42, 4449, 51-52, 54-59, 61-71, 73-75, and 77-80 are allowed for the same reasons above.

Conclusion

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Douglas Lee, whose telephone number is (571) 272-3745. The examiner can normally be reached on Monday-Friday from 8:00AM- 4:30PM.

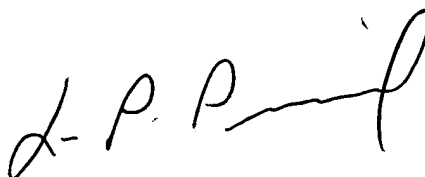
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Leo Picard*, can be reached on (571) 272-3749 or via e-mail addressed to [*leo.picard@uspto.gov*]. The fax number for this Group is (571) 273-8300. Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [*doug.lee@uspto.gov*].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122.

This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Douglas Lee


9/8/2005



**LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100**